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09/987,490	11/15/2001	Keiji Komoto	684.3260	7263

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EXAMINER

NOTE, JANIS L

ART UNIT

PAPER NUMBER

1756

DATE MAILED: 03/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/87,490

Applicant(s)

KOMOTO et al

Examiner

J. DOTE

Group Art Unit

1756

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 1/23/02
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-73 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-73 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☒ The drawing(s) filed on 11/15/03 is/are objected to by the Examiner
- ☒ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☒ All ☐ Some* ☐ None of the:

☒ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received

in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 5
- ☐ Interview Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

1. The US application 09/580,409 listed on the Information Disclosure statement filed in Paper No. 5 on Jan. 23, 2002, has been crossed-out by the examiner because said application has issued as US Patent No. 6,447,969 B1 (US'969). US'969 has been considered and is listed on the attached form PTO-892.

Applicants' statement of relevancy regarding Japanese Patent 7-99442, which is listed on the form PTO-1449 filed in Paper No. 5, is found in the instant specification at page 19, line 21, to page 20, line 17.

2. Figure 8 should be designated by a legend such as -- Prior Art -- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

In Fig. 2, the reference signs **312b**, **313a** through **313f**, and **310**. See the specification, pages 110-112.

In Fig. 3, the reference signs **313a** through **313f** and **310**.
See the specification, pages 110-112.

In Fig. 4, the reference signs **17**, **17a**, and **21**. See the
specification, pages 111-112.

In Figs. 5 and 6, the reference sign **200**. See the
specification, pages 140-141.

In Fig. 7, the reference sign **35**. See the specification,
page 169.

In Fig. 8, the reference sign **5**. See the specification,
page 201.

A proposed drawing correction, corrected drawings, or
amendment to the specification to add the reference sign(s) in
the description, are required in reply to the Office action to
avoid abandonment of the application. The objection to the
drawings will not be held in abeyance.

4. The disclosure is objected to because of the following
informalities:

(1) The specification at page 130, lines 23-24, discloses
the formula "AC voltage of blow $2 \times V_{th}$ (V_{th} : discharge
initiation voltage at the time of DC voltage application)"
(emphasis added). The word "blow" appears to be a typographic
error. The correct word is believed to be -- below --.

(2) The specification at page 148, line 6, describes the electroconductive support **21**. However, the specification at page 140, lines 9-10, and Figs. 5 and 6, label the electroconductive support by the reference sign **201**.

(3) The specification at page 117, line 27, to page 118, line 1, discloses an elastic conductive roller having an Asker C hardness of "at most 50 deg., preferably 25-50 deg." The instant specification does not disclose how the Asker C hardness is determined, let alone any standard used to determine the hardness. As shown in the prior art, there is more than one standard to determine Asker C hardness. See, for example, US 6,052,549 (Shimura). Shimura at col. 4, lines 32-38, defines its Asker C hardness as that "measured by a spring type ASKER C hardness meter (manufactured by Kobunshi Keiki K.K.) according to JIS K6050. In the present invention, the hardness is measured under a load of 500 g directly for an unfinished charging roller" In contrast, US 6,035,171 (Takaya) determines a hardness of 68 degrees according to JISK-6301 with a hardness meter Asker C and a load of 1 kgf. Takaya, col. 15, lines 26-27. US 6,459,878 B1 (Tomoyuki) determines a hardness of 55 degrees or lower using an ASKER-C hardness Meter under a load of 600 g. Tomoyuki, col. 11, lines 63-65. The instant specification does not disclose that the Asker C hardness is determined by any of

those standards mentioned in the prior art. The Asker C degree of hardness appears to depend on the load applied and standard used. Because the specification does not disclose the conditions under which the hardness is determined, the disclosure is inadequate to inform the ordinary worker in the art of all the information necessary to make and use the claimed invention.

In view of the evidence on the present record, because the specification does not disclose how the Asker C hardness is determined, nor what standard is used to determine the rubber hardness, it would require undue experimentation for a person having ordinary skill to determine the hardness recited in the instant claims.

The experimental conditions under which the Asker C rubber hardness are determined are essential subject matter since they are necessary to describe and enable the instant claimed subject matter. Essential subject matter must be disclosed in the specification as filed.

Applicants are reminded that essential subject matter cannot be incorporated by reference to non-patent literature, but must be fully disclosed in the specification as filed.

MPEP 608.01(p)A, 8th edition, Aug. 2001.

(4) The use of trademarks, e.g., "Coulter Multicizer" [sic: COULTER MULTISIZER] at page 108, line 8, has been noted in this application. The trademarks should be capitalized wherever they

appear and be accompanied by the generic terminology. This example is not exhaustive. Applicants should review the entire specification for compliance.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Appropriate correction is required.

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

(1) In claims 3 and 50, the recitation "potential of 250 to 550 volts in terms of an absolute value" lacks antecedent basis in the specification. See the specification, pages 157-158.

(2) In claim 13, the recitation "double oxides of these" lacks antecedent basis in the specification. See the specification, page 84, lines 11-14.

(3) In claim 16, the recitation "treated with at least a silane compound and silicone oil" (emphasis added) lacks antecedent basis in the specification. See the specification, pages 85, lines 21-23, which discloses treatment with a silane coupling agent and silicone oil. The term "silane compound"

recited in instant claim 16 is broader than the disclosed silane coupling agent, because it includes silane compounds that are not coupling agents.

(4) In claim 18, the recitation "magnetic toner has a resistivity of at most 10^9 ohm·cm" lacks antecedent basis in the specification. See the specification, page 109, lines 12-14, which discloses that the magnetic toner has resistivity of "at least 10^{10} ohm·cm, more preferably at least 10^{12} ohm·cm."

(5) In claim 24, the recitation "the image-bearing member is free from a heater therefor inside the cylindrical support" lacks antecedent basis in the specification. See the specification, page 158, lines 23-27, which discloses that the image-forming apparatus may be "preferably free from means for directly warming the image-bearing member."

(6) In claims 25 and 53, the recitation "surfacemost layer comprising a non-single crystal material different from that of the photoconductor layer" lacks antecedent basis in the specification. See the specification, pages 149-153.

(7) In claim 28, the recitation "a density of at most 10^3 particles/mm²" (emphasis added) lacks antecedent basis in the specification. See the specification at page 124, lines 2-3, which discloses that the amount of electroconductive powder at the contact position between the image-bearing member and the

contact charging member is "preferably at least
 10^3 particles/mm²" (emphasis added).

(8) In claim 33, the recitation "a void areal percentage at the surface of 15-90%" (emphasis added) lacks antecedent basis in the specification. See the specification, page 119, lines 11-12, which discloses a void percentage at the surface of 15-90%.

(9) In claims 45 and 71, the recitation "smaller than a gap between the toner-carrying member and the image-bearing member" lacks antecedent basis in the specification. See the specification, pages 165, lines 5-6, which states that the toner layer thickness is "smaller than the closest gap between the toner-carrying member and the photosensitive member" (emphasis added). The recited "gap" in instant claim 45 is broader than the disclosed "closest gap" because it includes gaps larger than the closest gap.

10) In claim 52, the recitation "the image-bearing member is free from a means for warming it" lacks antecedent basis in the specification. See the discussion in item (5), supra, regarding claim 24.

(11) In claim 61, the recitation "a void real percentage at the surface of 15-90%" (emphasis added) lacks antecedent basis in the specification. See the specification, page 119, lines 11-12, which discloses a void percentage at the surface of 15-90%.

6. The following terms are means-plus-function limitations covered by the 35 U.S.C. 112, sixth paragraph:

-
- (1) electrostatic latent-image forming means; and
 - (2) means for warming the image-bearing member.

The only definition of the electrostatic latent-image forming means is provided in Figs. 2 and 3, and at page 159, lines 9-15, of the specification, and equivalents thereof. Figs. 2 and 3 comprises "a laser light L from a laser light source to form an electrostatic image." See the specification, page 110, lines 11-12. The specification at page 159, discloses that the "exposure means [to form an electrostatic latent image] is not limited to a laser scanning exposure means . . . but can be ordinary analog imagewise exposure means or other light-emitting devices, such as LED, or a combination of light source, such as a fluorescent lamp, and a liquid crystal shutter."

The specification does not define "means for warming the image-bearing member. See the instant specification, page 158, lines 24-25.

7. The following terms are not covered by the 35 U.S.C. 112, sixth paragraph because such "means for" are modified by sufficient structure, material, or acts for achieving the specified function. See MPEP 2181.

(1) "developing means including a toner-carrying member for transferring a magnetic toner carrier on the toner-carrying member";

(2) a charging means for charging the image-bearing member which comprises "a charging member supplied with a voltage and abutted against the image-bearing member to form a contact nip with the image-bearing member [claim 1: at a contact position]";

(3) a transfer "means for electrostatically transferring the toner image on the image-bearing member onto a transfer member via or without via an intermediate transfer member"; and

(4) "developing means also functions as a means for recovering a portion of the magnetic toner remaining on the image-bearing member."

8. The following phrases and terms have been defined in the instant specification:

(1) The term "silicon-based" recited in instant claims 1, 25, 48, and 53 is defined as meaning "that the material comprises silicon as a principal element." See the specification, page 35, lines 17-18.

(2) The term "non-single crystal material" recited in instant claims 1, 25, 26, 48, 53, and 54 is defined as a material "principally in an amorphous state but can contain a minor

proportion of microcrystalline or polycrystalline material." See the specification, page 35, lines 9-16.

(3) The phrases "0.05 to 3.00% of isolated iron-containing particles" recited in instant claims 1 and 48, "0.05-2.00% of isolated iron-containing particles" recited in instant claim 6, "0.05-1.50% of isolated iron-containing particles" recited in instant claim 7, and "0.05-0.80% of isolated iron-containing particles" recited in instant claim 8, are defined in the specification at page 41, line 14, to page 44, line 4. The term "isolated iron-containing particles" is defined as "particles of iron or iron compound . . . isolated from magnetic toner particles." See the specification, page 41, lines 15-18. The percentages of isolated iron-containing particles recited in the instant claims are defined as $100 \times \{(\text{number of atomic luminescence (AL) of Fe alone}) / [(\text{number of AL of Fe simultaneous with AL of C}) + (\text{number of AL of Fe alone})]\}$. See the specification, page 41, lines 22, to page 42, line 9. In the case of a magnetic toner particle comprising magnetic iron oxide particles, the specification at page 42, lines 10-17, discloses that the "simultaneous luminescence of carbon atom and iron atom means a luminescence from a toner particle containing magnetic iron oxide dispersed therein, and the luminescence of only iron atoms means a luminescence from an isolated iron-containing particle." In other words, the "percentage of isolated iron-

containing particles" is the ratio of the number of iron-containing particles present in the magnetic toner that are not dispersed in the magnetic toner to the total number of iron-containing particles (i.e., the sum of the number of iron-containing particles dispersed in the magnetic toner particles and the number of iron-containing particles that are not dispersed in the magnetic toner).

(4) The term "average circularity" recited in instant claims 1, 9, and 48 is defined by formula (2) at page 38, line 26. The determination of the average circularity is described in the specification at page 38, line 9, to page 40, line 19, of the specification.

(5) The term "mode circularity" recited in instant claim 10 is defined at page 38, line 26, to page 39, line 7. The determination of the mode circularity is described in the specification at page 38, line 9, to page 40, line 19.

If applicants do not agree with the above definitions, they should clearly state so, and indicate where in the originally filed specification there is support for their definitions.

9. Claims 1, 28, 29, 47, 57, 61, and 73 are objected to because of the following informalities:

In claims 1, 28, 29, 47, 57, and 73, the misspelled word "baring" in the term "image-baring member." The correct term is "image-bearing member."

In claim 61, the misspelled word "real" in the term "void real percentage." The correct term is "void areal percentage."

Appropriate correction is required.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 20, 23, 31, 50-52, 54, 59, and 68 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 is indefinite in the phrase "a metal oxide in an oxygen-deficient state" because it is not clear what is meant by the phrase "in an oxygen-deficient state," which is not defined by the instant specification. See the specification, page 94.

Claim 23 is indefinite in the phrase "the wax has a maximum heat-absorption peak temperature . . ." (emphasis added) for lack of antecedent basis in claim 1. Claim 1 does not recite the presence of a wax in the magnetic toner.

Claims 31 and 59 are indefinite in the phrase "an Asker C hardness of at most 50 deg." because it is not clear what is the scope of said limitation. Neither the instant claims nor the instant specification define the conditions under which the recited Asker C hardness are determined. See the discussion in paragraph 4, item (3), supra.

Claims 50 and 51 are indefinite in the phrase "in the charging means, the image-bearing member is charged to a potential . . ." (emphasis added) for lack of unambiguous antecedent basis. It is not clear how the image-bearing member is charged in the charging means. Instant claim 48 does not recite that the image-bearing member is part of the charging means. Rather, instant claim 48 recites that the charging means comprises a charging member that is abutted against the image-bearing member.

Claim 52 is indefinite in the term "means for warming it [the image-bearing member]" because the instant specification does not define said "means." The specification does not provide an adequate written description that links or associates particular structure to the function recited in the means-plus function limitation. See MPEP 2181.

Claim 54 is indefinite in the phrase "the surfacemost layer comprises a non-single crystal carbon hydride film" (emphasis

added) for lack of antecedent basis in claim 48. Claim 48 does not recite the presence of a "surfacemost" layer.

Claim 68 is indefinite because it depends from claim 481, which is not present in the instant application. It is not clear from what claim applicants intended claim 68 to depend.

12. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

13. Claims 31 and 59 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Instant claims 31 and 59 recite an Asker hardness of 50 degrees.

The instant specification does not disclose adequately how the Asker C hardness is determined. The specification at page 117, line 27, to page 118, line 1, merely discloses the values of Asker C hardness recited in the instant claims. The specification is silent as to the experimental conditions under

which the hardness is determined. The specification does not disclose that the Asker C hardness is determined by any particular known standard. As argued in paragraph 4, item (3), supra, the Asker C hardness appears to be dependent on the standard used and on the load applied to determine the hardness. The specification gives no guidance on what load is used. The working examples merely recite the values of Asker C hardness. Nor does the specification disclose what standard should be used to determine the Asker C hardness. In addition, as discussed in paragraph 4 above, the prior art discloses more than one standard to determine Asker C hardness. Moreover, the standards do not appear to be equivalent. Because of (1) the infinite choices of applied loads, (2) the different standards used in determining the Asker C hardness, and (3) the total lack of guidance from the instant specification, it would require undue experimentation for a person having ordinary skill to determine the experimental parameters needed to obtain the instant claimed numerical ranges of Asker C hardness.

14. Claim 52 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 52 recites the term "means for warming it [the image-bearing member]."

The originally filed specification does not provide an adequate written of the structure corresponding to such "means." See MPEP 2181. The originally filed specification at page 158, lines 24-25, states that the image forming apparatus "may preferably be free from means for directly warming the image-bearing member, e.g., for minimizing power consumption." The specification does not provide an adequate written description that links or associates particular structure to the function recited in the means-plus function limitation recited in instant claim 52.

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international

application designated the United States and was published under Article 21(2) of such treaty in the English language.

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f), or (g) prior art under 35 U.S.C. 103(a).

18. Claims 48, 50-60 and 63-73 are rejected under 35 U.S.C.
102(e) as being anticipated by US 2002-00115012 A1

(Hashizume'012).

Hashizume'012 discloses an imaging apparatus comprising:

(1) An image bearing member that is within the compositional and structural limitations recited in instant claims 48 and 52-54. The member comprises an electroconductive support, a photoconductor layer comprising a silicon-based non-single crystal material, and a "surfacemost" layer comprising a non-single crystal carbon hydride film. Paragraphs 0034, 0035, and 0087. The image bearing member does not comprise a means for warming it. See Figs. 4 and 5.

(2) A charging means for charging the image-bearing member comprising a charging member supplied with a voltage and abutted against the image-bearing member to form a contact nip with the image-bearing member. Paragraphs 0142-0143. The charging means can be a magnetic brush that is within the compositional limitations recited in instant claims 65-67. Paragraphs 0143, 0147, and 0149. The charging means can be rollers that are within the compositional and structural limitations recited instant claims 55, 59, and 60. Paragraphs 0167-0168, 0170-0173, and 0175, and Fig. 5. The charging means further comprises a DC voltage source. Fig. 5 and paragraph 0170.

(3) A laser light device as the electrostatic latent-image forming means, which is within the definition disclosed in the instant specification. Paragraph 0239 and Fig. 7, reference sign 710. See paragraph 6, supra.

(4) A developing means that comprises a toner-carrying member for transferring magnetic toner. See Figs. 4-7.

(5) A transfer means that is within the structural limitations recited instant claims 48 and 73. See Fig. 7 and paragraph 0240.

Hashizume'012 does not disclose the following functional limitations: (1) the image-bearing member is charged to a particular potential as recited in instant claims 48, 50, and 51; (2) transferring a particular magnetic toner recited in instant claim 48; and (3) the functional language recited in instant claims 56 and 68-72. However, the instant claims do not positively recite that apparatus comprises the particular magnetic toner, the electroconductive fine powder, the ferromagnetic metal blade, and the AC voltage source recited in the instant claims. For example, instant claim 48 merely recites "a toner-carrying member for transferring a magnetic toner" (emphasis added)," which does not distinguish the structural elements in the instantly claimed apparatus from those in Hashizume'012's apparatus. Furthermore, the recitation "image-

bearing member . . . is charged to a potential of . . .” recited in instant claims 48, 50, and 51, does not distinguish the structural elements in the instantly claimed apparatus from those in Hashizume’012’s apparatus. See MPEP § 2114. “A claim containing a ‘recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus’ if the prior art apparatus teaches all the structural limitations of the claim.” MPEP 2114. In addition, a material (i.e., the magnetic toner) worked upon by the apparatus does not limit the apparatus claims. “Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims.” See MPEP § 2115. It is well settled, as stated in Ex parte Masham, 2 USPQ2d 1647, 1648 (Bd. Pat. App. & Int. 1987) that “a recitation with respect to the material intended to be worked upon by a claimed apparatus does not impose any structural limitations upon the claimed apparatus which differentiates it from the prior art apparatus satisfying the structural limitations of that claimed.” Accordingly, functional language regarding the particular magnetic toner and the potential recited in instant claims instant claims 48, 50, and 51, and the functional language recited in instant claims 56 and 68-72 do not distinguish the apparatus disclosed by Hashizume’012.

19. Claims 48, 50-53, 55-58, 63-65, and 68-73 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,729,800 (Ohba).

Ohba discloses an imaging apparatus comprising:

(1) An image bearing member that is within the compositional and structural limitations recited in instant claims 48, 52, and 53. The member comprises an electroconductive support and a photoconductor layer comprising a silicon-based non-single crystal material and a "surfacemost" layer comprising a non-single crystal material different from the photoconductive layer. Col. 5, line 60, to col. 6, line 2; and col. 16, lines 1-24. Ohba discloses that the image-bearing member does not need a heater. Col. 6, lines 42-47 and 60-63. Ohba discloses that its image-bearing member is charged to have an initial potential of 450 V or less. Col. 6, lines 35-41 and 56-57.

(2) A magnetic brush or charging roller for charging the image-bearing member supplied with a voltage and abutted against the image-bearing member to form a contact nip with the image-bearing member. Col. 5, lines 52-55; Fig. 3, reference signs 90 and 94; and col. 26, line 35, to col. 27, line 2.

(3) A laser light device 2 as the electrostatic latent-image forming means, which is within the definition disclosed in the instant specification. See Fig. 3; col. 13, lines 53-54; and col. 14, lines 4-7. See paragraph 6, supra.

(4) A developing means that comprises a toner-carrying member **42** for transferring magnetic toner. See Fig. 3, and col. 6, lines 29-34.

(5) A transfer means **5** that is within the structural limitations recited instant claims 48 and 73. See Fig. 3; col. 13, line 54; and col. 14, lines 9-14.

Ohba does not disclose the following functional limitations: (1) transferring a particular magnetic toner; and (2) the functional language recited in instant claims 55, 56, and 68-72. However, the instant claims do not positively recite that the apparatus comprises the particular magnetic toner, the electroconductive fine powder, and the ferromagnetic metal blade recited in the instant claims. For example, instant claim 48 merely recites "a toner-carrying member for transferring a magnetic toner" (emphasis added)," which does not distinguish the structural elements in the instantly claimed apparatus from those in Ohba's apparatus. See MPEP § 2114. In addition, a material (i.e., the magnetic toner) worked upon by the apparatus does not limit the apparatus claims. See MPEP § 2115. Accordingly, functional language regarding the particular magnetic toner recited in instant claim 48 and the functional language recited in instant claims 55, 56, and 68-72 do not distinguish the apparatus disclosed by Ohba.

20. Claims 1-25, 27-37, 41, 42, and 44-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent

1,128,225 A2 (EP'225) combined with Ohba.

EP'225 discloses an image forming method comprising the steps of: (1) charging an image-bearing member with a charging member supplied with a voltage and abutted against the image-bearing member at a contact position; (2) forming a digital electrostatic latent image on the charged image-bearing member with a laser; (3) developing the electrostatic latent image by transferring a magnetic toner carried on a toner-carrying member to the latent image to form a magnetic toner image; and (4) electrostatically transferring the magnetic toner image on the image-bearing member to a transfer material with or without an intermediate transfer member. Page 9, lines 35-48 and page 39, lines 20-25.

EP'225 discloses that the developing step can also function as a cleaning step to remove magnetic toner from the image-bearing member after transfer as recited in instant claim 27. Page 31, lines 54-56. EP'225 discloses a developing step that is within the limitations recited in instant claims 42 and 44-46. Page 37, lines 53-54; page 39, lines 1-2 and 17-19. EP'225 discloses a contact charging step that is within the limitations recited in instant claims 2 and 28-37. EP'225, page 32, lines 11, 15-23, 35-36, and 49-50; page 32, line 54, to page 33,

line 5; page 33, lines 24-31 and 52-58, and page 34, lines 6-17 and 49-51. EP'225 further discloses that in the transfer step, the transfer member is abutted against the image-bearing member via the transfer material to transfer the toner image. Page 37, lines 12-17.

EP'225 discloses a magnetic toner that is within the compositional limitations recited in instant claims 1, 6-17, and 19-23. See the production of magnetic toner 2 at page 42, and in Table 2 at page 58. Magnetic toner 2 comprises magnetic toner particles comprising a binder resin, a surface-treated magnetic iron oxide 1 with a silane coupling agent, and an ester wax; and hydrophobic silica particles and conductive powder 2. The magnetic toner has a weight-average particle size of 7.3 μm , an average circularity of 0.981, a modal circularity of 1.00, and 0.25% of liberated iron-containing particles. See Table 2. Magnetic toner 2 also has a magnetization of 24 to 26 Am^2/kg in a magnetic field of 79.6 KA/m , which is within the range of 10-50 Am^2/kg recited in instant claim 5. EP'225, page 46, lines 32-33. The particle size, average circularity, and modal circularity are within the respective ranges recited in instant claims 1, 9, and 10. The amount 0.25% of liberated iron-containing particles has the same meaning as the percentage of isolated iron-containing particles recited in the instant claims and is within the ranges recited in instant claims 6-8. See

paragraph 8, item (3), supra; and EP'225, page 11, line 50, to page 12, line 11.

EP'225 does not disclose that its magnetic toner 2 has a resistivity of at most 10^9 ohm·cm as recited in instant claim 18. However, EP'225 meets the compositional and other physical limitations recited in instant claim 1, 17, and 18. See production of magnetic toner 2 and Table 2. Thus, it is reasonable to presume that EP'225's magnetic toner 2 has a resistivity that is within the range of at most 10^9 ohm·cm recited in instant claim 18. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

EP'225 does not disclose that its image-bearing member is charged to a potential of 250 to 600 volts as recited in instant claim 1. Nor does EP'225 exemplify an image-bearing member comprising a photoconductive layer comprising a silicon-based non-single crystal material as recited in instant claim 1. However, EP'225 discloses that the image-bearing member used in its method can be a photosensitive member comprising amorphous silicon. Page. 35, line 19.

Ohba discloses an image-bearing member comprising an electroconductive cylindrical support, a photoconductive layer comprising amorphous silicon and a "surfacemost" layer comprising a non-single crystal material different from the photoconductive layer. The photoconductive layer has a thickness of 2 to 24 μm

"to permit a low charging potential and electric field development." Col. 5, line 60, to col. 6, line 2; and col. 16, lines 1-24. Ohba discloses that the image-bearing member does not need a heater. Col. 6, lines 42-47 and 60-63. Ohba discloses that its image-bearing member is charged to have an initial potential of 450 V or less, and that the member can be uniformly charged with a charging roller or a charging brush. Col. 5, lines 52-55; and col. 6, lines 35-41 and 56-57. Ohba discloses that the electrostatic latent images formed on its image-bearing member can be developed with a single component conductive magnetic toner. Col. 6, lines 29-34. Ohba discloses that its image-bearing member eliminates "dark attenuation increase" and reduction of photosensitivity or resolution. Col. 5, lines 15-22. Ohba discloses that its image-bearing member has high durability and provides high contrast, high quality images free from fog. Col. 5, lines 30-35 and 42-49.

It would have been obvious for a person having ordinary skill in the art to use Ohba's image-bearing member comprising amorphous silicon as the image-bearing member in the method disclosed by EP'225 and to charge Ohba's image-bearing member to a potential of 450 volts or less in the contact charging step disclosed by EP'225, because that person would have had a reasonable expectation of successfully obtaining an image forming

method that provides high contrast, high quality images without fog for a long period of time.

21. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP'225 combined with Ohba, as applied to claim 25 above, further combined with European Patent 989,470 A2 (EP'470).

The combined teachings of EP'225 and Ohba render obvious an image forming method as described in paragraph 20 above.

Neither EP'225 nor Ohba discloses the use of an image-bearing member comprising a "surfacemost" layer comprising a non-single crystal carbon hydride film. However, Ohba discloses that its surface layer can be amorphous carbon, etc. Col. 16, lines 22-24.

EP'470 discloses that an image-bearing member comprising an amorphous silicon photoconductive layer can comprise a "surfacemost" layer comprising amorphous carbon hydride film. Page 14, lines 43-44. EP'470 discloses that an amorphous carbon hydride film has high hardness and high durability. The film has low friction and good water repellency. Image blurriness is prevented under high humidity even when a heater is omitted in the image forming member. Page 14, lines 44-46. EP'470 also discloses that the "movement of the charge-promotion particles [in a contact-charging foam-containing roller] or other particles

toward the photosensitive member [i.e., the image-bearing member] due to the mechanical friction can be suppressed." Page 6, lines 34-36; and page 14, lines 44-46.

It would have been obvious to a person having ordinary skill in the art, in view of the teachings of EP'470, to use an amorphous carbon hydride film as the "surfacemost" layer in the image-bearing member in the method rendered obvious over the combined teachings of EP'225 and Ohba, because that person would have had a reasonable expectation of successfully obtaining an image forming method that provides high contrast, high quality images without fog and blurriness for a long period of time.

22. Claims 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP'225 combined with Ohba, as applied to claim 37 above, further combined with US 6,026,260 (Aita).

The combined teachings of EP'225 and Ohba render obvious an image forming method as described in paragraph 20 above.

EP'225 does not disclose a contact charging magnetic brush as recited in the instant claims. As discussed in paragraph 20 above, EP'225 discloses that its contact-charging member can be a magnetic brush. Page 32, line 11.

Aita discloses a contact charging magnetic brush that is supplied with a voltage while contacting the image-bearing member. Col. 13, lines 9-61. The magnetic particles comprise a

particular ferrite represented by the formula disclosed at col. 5, lines 1-7. The magnetic particles have a volume-basis median particle size of preferably 15-40 μm , which is within the range of 10-50 μm recited in instant claim 39. Col. 10, lines 39-53. The magnetic particles have a volume resistivity of 1×10^4 to 1×10^9 ohm-cm, which is the range recited in instant claim 40. Col. 9, lines 30-35. Aita discloses that its charging magnetic particles provides a charging member with "a remarkably improved durability or long-term performance." Col. 5, lines 58-62.

It would have been obvious for a person having ordinary skill in the art to use Aita's magnetic brush as the contact charging element in the image forming method rendered obvious over the combined teachings of EP'225 and Ohba, because that person would have had a reasonable expectation of successfully obtaining an image forming method having the benefits disclosed by Aita.

23. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP'225 combined with Ohba as applied to claim 1 above, further combined with US 5,998,008 (Shimamura).

The combined teachings of EP'225 and Ohba render obvious an image forming method as described in paragraph 20 above.

Neither EP'225 nor Ohba discloses regulating the amount of magnetic toner on the toner-carrying member by a ferromagnetic metal blade as recited in instant claim 47. However, EP'225 discloses that a layer thickness regulating member can be used to regulate the amount of magnetic toner on the toner-carrying member. Page 37, lines 48-50.

However, the use of a developing device comprising a regulating ferromagnetic blade is well-known in the art. Shimamura discloses a magnetic toner developing device comprising a toner-carrying member 8 comprising a particular coating layer 7 and a ferromagnetic blade 2. See Fig. 1, and col. 12, line 39, to col. 13, line 14. The ferromagnetic blade 2 is disposed opposite to the toner-carrying member 8. Shimamura discloses that the magnetic toner particles gain triboelectric charges capable of developing the electrostatic latent image on an image-bearing drum 1 due to the friction between the toner particles and the coating layer 7. Col. 12, lines 59-63. The ferromagnetic blade 2 controls the magnetic toner layer thickness on the toner-carrying member 8. Col. 12, line 64, to col. 13, line 4. Shimamura discloses that the thickness of the magnetic toner layer formed on the toner-carrying member 8 is preferably smaller than the minimum gap between the toner-carrying member 8 and the image-bearing drum 1 in the developing zone D. Col. 13,

lines 10-14. Shimamura further discloses that to enhance the density of the developed images or to improve the gradation thereof, an alternating bias voltage may be applied to the toner-carrying member to form in the developing zone D a vibrating electric field whose direction alternatively reverses. Col. 13, lines 41-45. Shimamura discloses that its developing device prevents toners from being non-uniformly charged on the toner-carrying member when the particle size of the toners is small, and properly imparts charges to toners. Col. 3, lines 22-29. Shimamura further discloses that its developing device does "not cause problems such as density decrease, sleeve ghost, and fog over a long period of time," and can "stably give high-grade images having a good character line sharpness and a high image density." Col. 3, lines 13-21.

It would have been obvious for a person having ordinary skill in the art to use Shimamura's developing device in the developing step in the image forming method rendered obvious over the combined teachings of EP'225 and Ohba, because that person would have had a reasonable expectation of successfully obtaining an image forming method that stably provides "high-grade images having a good character line sharpness and a high image density."

24. Claims 48-53, 55-64, and 68-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP'225 combined with Ohba.

EP'225 discloses an image forming method as recited in paragraph 20 above, which is incorporated herein by reference. That method uses an apparatus that comprises a charging means, a developing means, and a transfer means that are within the structural and compositional limitations recited in the instant claims. Also see EP'225, Figs. 1-3 and 6, and the text explaining Fig. 6 at page 52, line 37, to page 53, line 55.

EP'225 does not exemplify an image-bearing member as recited in the instant claims. However, EP'225 discloses that the image-bearing member used in its method can be a photosensitive member comprising amorphous silicon. Page. 35, line 19.

Ohba discloses an image-bearing member comprising an electroconductive cylindrical support, a photoconductive layer comprising amorphous silicon and a "surfacemost" layer comprising a non-single crystal material different from the photoconductive layer. Ohba discloses the advantages of using its image-bearing member. The discussion of Ohba in paragraph 20 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Ohba's image-bearing member comprising amorphous silicon as the image-bearing member in the apparatus disclosed by EP'225, because that person would have had a

reasonable expectation of successfully obtaining an image forming apparatus that provides high contrast, high quality images without fog for a long period of time.

The combined teachings of EP'225 and Ohba do not disclose the functional limitation recited in the instant claim 69. As discussed above, the combined teachings of EP'225 and Ohba render obvious an apparatus comprising all the structural limitations recited in the instant claims. The functional limitation does not distinguish the apparatus rendered obvious over the combined teachings of EP'225 and Ohba. See MPEP § 2114.

25. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP'225 combined with Ohba, as applied to claim 48 above, further combined with EP'470.

The combined teachings of EP'225 and Ohba render obvious an image forming apparatus as described in paragraph 24 above.

Neither EP'225 nor Ohba discloses the use of an image-bearing member comprising a "surfacemost" layer comprising a non-single crystal carbon hydride film as recited in instant claim 54. However, Ohba discloses that its surface layer can be amorphous carbon, etc. Col. 16, lines 22-24.

EP'470 discloses the advantages of a "surfacemost" layer comprising amorphous carbon hydride. The discussion of EP'470 in paragraph 21 above is incorporated herein by reference.

It would have been obvious to a person having ordinary skill in the art, in view of the teachings of EP'470, to use an amorphous carbon hydride film as the surfacemost layer in the apparatus rendered obvious over the combined teachings of EP'225 and Ohba, because that person would have had a reasonable expectation of successfully obtaining an image forming apparatus that provides high contrast, high quality images without fog and blurriness for a long period of time.

26. Claims 65-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP'225 combined with Ohba, as applied to claim 48 above, further combined with Aita.

The combined teachings of EP'225 and Ohba render obvious an image forming apparatus as described in paragraph 24 above.

EP'225 does not disclose a contact charging magnetic brush as recited in the instant claims. As discussed in paragraph 20 above, EP'225 discloses that its contact-charging member can be a magnetic brush. Page 32, line 11.

Aita discloses a contact charging magnetic brush comprising magnetic particles comprising a particular ferrite represented by the formula disclosed at col. 5, lines 1-7. Aita further discloses the advantages of using its magnetic brush. The discussion of Aita in paragraph 22 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Aita's magnetic brush as contact charging element in the image forming apparatus rendered obvious over the combined teachings of EP'225 and Ohba, because that person would have had a reasonable expectation of successfully obtaining an image forming apparatus having the benefits disclosed by Aita.

27. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

28. The following rejections are provisional obviousness-type double patenting rejections.

29. Claims 1-25, 27-36, 41, 42, and 44-47 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over

claims 1-57 of copending Application No. 09/788,399
(Application'399) in view of Ohba.

Application'399 is the US equivalent of EP'225.

Application'399 claim 35 recites an image forming method that is within the limitations recited in instant claims 1, 5-9, and 45, but for the particular image-bearing member charged to a particular potential and the presence of both inorganic particles and electroconductive particles on the surface of the toner particles as recited in instant claim 1. Application'399 claim 36, which recites the magnetic toner recited in reference claims 2-34, recites an image forming method that is within the limitations recited in instant claims 1, 5-23, and 45, but for the particular image-bearing member charged to a particular potential and the presence of both inorganic particles and electroconductive particles as recited in instant claim 1. Reference claims 37-48 and 54-57, which depend from reference claim 35, further require a toner recovering step, charging steps, developing steps, and a transferring step that are within the limitations recited in instant claims recited in instant claims 2, 27-36, 42, 44, 46, and 47.

As discussed above, reference claims 35 and 36 do not recite that the magnetic toner comprises inorganic particles and electroconductive particles as recited in instant claim 1. However, as discussed above, reference claim 36, which recites

the magnetic toner recited in reference 14-20, requires that the magnetic toner further comprise inorganic particles that are within the compositional limitations recited in instant claims 12-16. Reference claims 36, which recites the magnetic toner recited in reference claims 22-25, requires that the magnetic toner further comprise electroconductive particles that are within the compositional limitations recited in instant claims 17-20.

Thus, it would have been obvious for a person having ordinary skill in the art, in view of the subject matter claimed in Application'399, to add inorganic and electroconductive particles recited in reference claims 14-20 and 22-25 to the surface of the magnetic toner particles recited in reference claims 35 and 36, such that the resultant magnetic toner is within the compositional limitations recited in instant claims 1 and 12-20, and to use the resultant magnetic toner in the image forming methods recited in reference claims 35 and 36, because that person would have had a reasonable expectation of successfully obtaining an image forming method that provides repeatedly many magnetic toned images.

As discussed above, Application'399's claims 35 and 36 do not recite that their image-bearing members are charged to a potential as recited in instant claim 1. Nor do reference

claims 35 and 36 recite the use of an image-bearing member as recited in instant claim 1.

Ohba discloses an image-bearing member comprising an electroconductive cylindrical support, a photoconductive layer comprising amorphous silicon, and a "surfacemost" layer comprising a non-single crystal material different from the photoconductive layer. Ohba discloses that its image-bearing member is charged to have an initial potential of 470 V or less. The discussion of Ohba in paragraph 20 above is incorporated herein by reference. Ohba further discloses that its charged image-bearing member can be imagewise exposed by a LED head to form a digital electrostatic latent image. Col. 24, lines 4-7.

It would have been obvious for a person having ordinary skill in the art to use Ohba's image-bearing member comprising amorphous silicon as the image-bearing member in the method rendered obvious over the subject matter recited in the claims of Application'399 and to charge Ohba's image-bearing member to a potential of 450 volts or less in the contact charging step recited in said method and to image-wise expose the charged image-bearing member as taught by Ohba. That person would have had a reasonable expectation of successfully obtaining an image forming method that provides digitally-obtained, high contrast, high quality images without fog for a long period of time.

30. Claim 26 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-57 of Application'399 in view of Ohba, further in view of EP'470.

The subject matter recited in Application'399 combined with the teachings of Ohba renders obvious an image forming method as described in paragraph 29 above, which is incorporated herein by reference.

The claims of Application'399 do not recite, nor does Ohba disclose, the use of an image-bearing member comprising a "surfacemost" layer comprising a non-single crystal carbon hydride film as recited in instant claim 26. However, Ohba discloses that its surface layer can be amorphous carbon, etc. Col. 16, lines 22-24.

EP'470 discloses the advantages of a "surfacemost" layer comprising amorphous carbon hydride. The discussion of EP'470 in paragraph 21 above is incorporated herein by reference.

It would have been obvious to a person having ordinary skill in the art, in view of the teachings of EP'470, to use an amorphous carbon hydride film as the surfacemost layer in the method rendered obvious over the subject matter recited in the claims of Application'399 combined with the teachings of Ohba, because that person would have had a reasonable expectation of successfully obtaining an image forming method that provides high

contrast, high quality images without fog and blurriness for a long period of time.

31. Claims 37-40 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-57 of Application'399 in view of Ohba, further in view of Aita.

The subject matter recited in Application'399 combined with the teachings of Ohba renders obvious an image forming method as described in paragraph 29 above, which is incorporated herein by reference.

The claims in Application'399 do not recite a contact charging magnetic brush as recited in the instant claims.

Aita discloses a contact charging magnetic brush comprising magnetic particles comprising a particular ferrite represented by the formula disclosed at col. 5, lines 1-7. Aita further discloses the advantages of using its magnetic brush. The discussion of Aita in paragraph 22 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Aita's magnetic brush as the contact charging element in the image forming method rendered obvious over the subject matter recited in the claims in Application'399 combined with the teachings of Ohba, because that person would

have had a reasonable expectation of successfully obtaining an image forming method having the benefits disclosed by Aita.

32. Claim 43 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-57 of Application'399 in view of Ohba, further in view of Shimamura.

The subject matter recited in Application'399 combined with the teachings of Ohba renders obvious an image forming method as described in paragraph 29 above, which is incorporated herein by reference.

The claims in Application'399 do not recite regulating the amount of magnetic toner on the toner-carrying member by a ferromagnetic metal blade as recited in instant claim 47.

However, the use of a developing device comprising a regulating ferromagnetic blade is well-known in the art. Shimamura discloses a magnetic toner developing device comprising a toner-carrying member 8 comprising a particular coating layer 7 and a ferromagnetic blade 2. Shimamura's developing device provides a developing method that is within the limitations recited in Application'399's developing step in reference claims 35 and 36. The discussion of Shimamura in paragraph 23 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Shimamura's developing device in the developing step in the image forming method rendered obvious over subject matter claimed in Application'399 combined with the teachings of Ohba, because that person would have had a reasonable expectation of successfully obtaining an image forming method that stably provides "high-grade images having a good character line sharpness and a high image density."

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (703) 308-3625. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (703) 308-2464. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9311 (Rightfax) for after final faxes, and (703) 872-9310 for other official faxes.

Any inquiry of papers not received regarding this communication or earlier communications, or of a general nature or relating to the status of this application or proceeding should be directed should be directed to the Customer Service Center of Technology Center 1700 whose telephone number is (703) 306-5665.

JLD
March 3, 2003

Janis L. Dote
JANIS L. DOTE
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1700